Amendments

In the Claims:

Please substitute the following claims 1-3, 5, 7, 8, 16, 20, 21 and 23-28 for the pending claims 1-3, 5, 7, 8, 16, 20, 21 and 23-28:

B1

1. (Twice Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using lithographic compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die.

2. (Amended) The cooling assembly of claim 1, wherein the lithographic compliant interconnects are coupled between each die and the package.

3. (Amended) The cooling assembly of claim 2, wherein said lithographic compliant interconnects comprise spring contacts.

B2

5. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

Cond B2

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package,

wherein said compliant interconnects comprise spring contacts, and

wherein said spring contacts comprise lithographic springs.

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7. (Amended) A cooling assembly comprising:

B3

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

wherein each die has at least one active surface, and when the coolant circulates in the cavity the coolant directly cools each active surface of each die.

8. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

Cont B3

wherein each die has a plurality of surfaces within the cavity including at least one active surface associated with respective active electronic components, and when the coolant circulates in the cavity the coolant directly cools each surface of each die, thereby reducing thermal gradients or hot spots on each active surface of each die and increasing the operating range of each die.

16. (Amended) A cooling assembly comprising:

B4

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

wherein said package further comprises a bottom substrate on one side of the cavity, wherein each die with active electronic components is connected to the bottom substrate by the compliant interconnects, and wherein the active electronic components face the bottom substrate and contact coolant surrounding the compliant interconnects within the cavity.

20. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

wherein said package further comprises a top substrate with a top surface representing an exterior surface of the package and wherein the top surface includes contacts, whereby external components can be electrically coupled to each die via the contacts.

21. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

wherein said package further comprises:

a top substrate;

Cancel B5

a bottom substrate; and

interconnection elements that provide electrical paths extending through the top substrate and the bottom substrate.

23. (Amended) A cooling assembly comprising:

B6

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package; and

a coolant circulation system coupled to said at least one coolant port, wherein the coolant circulates within the package and directly contacts all surfaces of each die to directly cool active electronic components during their operation.

24. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package;

a cooling member; and

one or more heat radiators, wherein each die is immersed in the coolant and each heat radiator transfers heat generated by each die from the coolant to said cooling member.

25. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package; and

at least one non- contacting compliant interconnect coupled to a surface of said at least one die, whereby, heat can be further directed away from the surface of a die.

26. (Amended) A cooling assembly comprising:

an electronic package having a cavity;

at least one die with active electronic components mounted using compliant interconnects within the cavity; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the active electronic components of each die,

wherein the compliant interconnects are coupled between each die and the package, and

wherein said package further comprises:

a top substrate; and

a bottom substrate,

wherein each die is flip-chip bonded to said top substrate.

Cond 36

27. (Amended) A method for direct cooling of active electronic components, comprising:

coupling active electronic components through lithographic compliant interconnects to a substrate of a package such that the active electronic components face the substrate;

sealing the attached active electronic components and compliant interconnects within a cavity of the package; and

circulating coolant through the package cavity to directly contact the active electronic components.

28. (Twice Amended) A cooling assembly, comprising:

means for sealing at least one die with active electronic components in a package the die mounted within this package using lithographic compliant interconnects; and

means for circulating coolant through the package during operation of the active electronic components to reduce thermal variations across each die.

Please add new claims 29-30 as follows:

29. (New) A cooling assembly comprising:

an electronic package having a cavity;

at least one die mounted using compliant interconnects within the cavity, the compliant interconnects including non-contacting compliant interconnects; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the at least one die.

30. (New) A cooling assembly comprising:

an electronic package having a cavity;

at least one die mounted using compliant interconnects within the cavity such that the compliant interconnects exert pressure to keep the die in place; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the at least one die.

31. (New) A cooling assembly comprising:

an electronic package having a top substrate, a bottom substrate and a cavity between the top and bottom substrates, the substrates coupled to each other using compliant interconnects located within the cavity;

at least one die within the cavity and bonded to the top substrate; and

at least one coolant port that allows a coolant to enter the cavity and directly cool the at least one die.